Journal of Microscopy

1982. Vol. 126 Contents and Indices

Joint Editors: P. Echlin, H. J. G. Gundersen,
D. C. Joy, G. W. Lorimer, A. J. Saubermann

EDITORIAL ADVISORY BOARD

J. R. Garrett
Gillian Bullock
B. C. Cowen
A. W. Robards

B. Afzelius
R. Barer
A. Boyde
S. Bradbury
V. E. Cosslett
A. G. Cullis
Audrey M. Glauert
J. I. Goldstein
D. T. Grubb
G. H. Haggis
T. A. Hall
P. B. Hirsch
A. Howie
J. V. P. Long
D. G. Murchison
D. E. Newbury
G. Nomarski
T. F. Page
H. Piller
J. S. Ploem
M. Pluta
P. Quested
B. Ralph
F. Rost
U. B. Sleytr
W. M. Stobbs
B. F. Trump
M. A. Williams

Representatives for the International Society for Stereology
H. E. Exner (I.S.S. President)
L. M. Cruz-Orive
H. P. Hougardy
R. E. Miles
W. L. Nicholson
H. J. Tanke
E. R. Weibel

Journal Executive Secretary: NINA MUIR

Published for the Royal Microscopical Society
by Blackwell Scientific Publications
Oxford London Edinburgh Boston Melbourne

Journal of Microscopy

Patron: HER MAJESTY THE QUEEN

Officers and Council 1981–82

President: J. R. GARRETT

Vice-Presidents: A. W. ROBARDS
J. S. PLOEM

Executive Hon. Secretary: GILLIAN BULLOCK

Hon. Treasurer: B. C. COWEN

Hon. Secretary (Education): P. J. EVENNETT

Ordinary Members of Council:

M. G. DOBB
P. ECHLIN
C. HAMMOND
D. A. HEMSLEY
S. J. HOLT
A. HOWIE
T. JOHNSON
B. D. LAKE
D. L. MISELL
T. F. PAGE
H. PILLER
P. C. ROBINSON

Hon. Joint Editors:

P. ECHLIN
H. J. G. GUNDERSEN
D. C. JOY
G. W. LORIMER
A. J. SAUBERMANN

Administrator: P. G. FLEMING

Contents of Vol. 126

Part 1

LOW TEMPERATURE BIOLOGICAL MICROSCOPY—II

KNUTE A. FISHER. Monolayer freeze-fracture autoradiography: origins and directions 1

KENNETH R. DILLER. Quantitative low temperature optical microscopy of biological systems 9

M. W. SCHEIWE and CH. KÖRBER. Thermally defined cryomicroscopy and some applications on human leucocytes 29

H. Y. ELDER, C. C. GRAY, A. G. JARDINE, J. N. CHAPMAN and W. H. BIDDLECOMBE. Optimum conditions for cryoquenching of small tissue blocks in liquid coolants 45

W. H. BIDDLECOMBE, D. MCEWAN JENKINSON, S. A. MCWILLIAMS, W. A. P. NICHOLSON, H. Y. ELDER and D. W. DEMPSTER. Preparation of cryosections with a modified Sorvall MT2B ultramicrotome and cryoattachment 63

B. L. ARMBRUSTER, E. CARLEMALM, R. CHIOVETTI, R. M. GARAVITO, J. A. HOBOT, E. KELLENBERGER and W. VILLIGER. Specimen preparation for electron microscopy using low temperature embedding resins 77

C. FORNIERI, I. PASQUALI RONCHETTI, A. C. EDMAN and M. SJÖSTRÖM. Contribution of cryotechniques to the study of elastin ultrastructure 87

R. F. EGERTON. Organic mass loss at 100 K and 300 K 95

U. B. SLEYTR and A. W. ROBARDS. Understanding the artefact problem in freeze-fracture replication: a review 101

Rapid Publication

P. M. FREDERIK, W. M. BUSING and W. M. A. HAX. Frozen-hydrated and drying thin cryo-sections observed in STEM RP1

Part 2

E. Carlemalm, R. M. Garavito and W. Villiger. Resin development for electron microscopy and an analysis of embedding at low temperature 123

K. Mannweiler, H. Hohenberg, W. Bohn and G. Rutter. Protein-A gold particles as markers in replica immunocytochemistry: high resolution electron microscope investigations of plasma membrane surfaces 145

J. Trinick and A. Elliott. Effect of substrate on freeze-dried and shadowed protein structures 151

I. Laszlo. Location of histological structure of the brain for subsequent monoamine fluorescence with the help of illumination by phase contrast condenser 157

Hans R. Hendriks and Inge L. Eestermans. Electron dense granules and the role of buffers: artefacts from fixation with glutaraldehyde and osmium tetroxide 161

Richard W. Horobin and John Proctor. Estimating the effect of etching agents on plastic sections 169

Klara Kiss and Robert N. Pease. Quantitative analysis of particle sizes: estimation of the most efficient sampling scheme 173

B. M. J. Stringer, D. Wynford-Thomas and E. D. Williams. Physical randomization of tissue architecture: an alternative to systematic sampling 179

G. H. J. Lewis and I. D. Bowen. An improved method for combined autoradiography and histochemistry: the simultaneous detection of 6-^{3}H thymidine and acid phosphatase activity in cryostat sections of mouse thymus and duodenum 183

Armstrong J. K. Gbewonyo. Rapid and reliable method for diagnostic electron microscopy of faeces 191

Short Technical Notes

D. M. Dwarte and Maret Vesk. Cytochemical localization of biliproteins with silicotungstic acid 197

J. Carson, R. M. K. W. Lee and J. B. Forrest. A simple method for the handling and orientation of small specimens for electron microscopy 201

A. E. Peltttari and S. O. Markkanen. A time saving device for vacuum evaporation 205

Charles J. Hackett and Kate Sullivan. A convenient culture chamber for observation and embedding of macrophage monolayers for transmission electron microscopy 207

J. C. Elliot and S. D. Dover. X-ray microtomography 211

Book Reviews; Errata 215

Part 3

LOW TEMPERATURE BIOLOGICAL MICROSCOPY—III

JACQUES ESCAIG. New instruments which facilitate rapid freezing at 83 K and 6 K 221

H.-W. TIFFE and H. HUNDESHAGEN. Investigation of fading and recovery of fluorescence intensity at 73·5 K 231

PAUL SCHEIE, HELGE DALEN, THORVALD SAETERSDAL and REIDAR MYKLEBUST. Freezing patterns in quench frozen, freeze-dried polyvinylpyrrolidone (PVP) 237

LAWRENCE P. AGGERBECK and TADEUSZ GULIK-KRZYWICKI. Freeze-fracture electron microscopic and low temperature X-ray scattering studies of the effect of cryofixation upon serum low density lipoprotein structure 243

NICOLE ROINEL. Radiation damage to microdroplets at low temperature 253

W. NIEDERMEYER and H. WILKE. Quantitative analysis of intramembrane particle (IMP) distribution on biomembranes after freeze-fracture preparation by a computer-based technique 259

WERNER M. A. HAX and SIEGFRIED LICHTENEGGER. Transfer, observation and analysis of frozen hydrated specimens 275

PATRICK ECHLIN, C. E. LAI and T. L. HAYES. Low-temperature X-ray microanalysis of the differentiating vascular tissue in root tips of *Lemna minor* L. 285

W. A. P. NICHOLSON, W. H. BIDDLECOMBE and H. Y. ELDER. A low X-ray background low temperature specimen stage for biological microanalysis in the TEM 307

TUDOR BARNARD. Thin frozen-dried cryosections and biological X-ray microanalysis 317

T. A. HALL and B. L. GUPTA. Quantification for the X-ray microanalysis of cryosections 333

D. G. SCHMIDT and W. BUCHHEIM. On the size of small protein particles determined by electron microscopy of unidirectionally shadowed freeze-etched preparations 347